

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

*In the Matter of the*

CITY OF BOSTON

Application and Waiver Pursuant to )  
Section 337(c) of the Communications Act )  
of 1934, as amended, and Section 1.925 of the )  
Commission's Rules to Assist Interoperable Public Safety )  
Radio Communications in the Boston Metropolitan )  
Area )

File No.

**APPLICATION AND WAIVER REQUEST**

Chief Gerald R. Reardon  
Cambridge Fire Department  
Chair, Metro-Boston Homeland Security  
Region Communications Interoperability  
Subcommittee

H. David Troup, Jr.  
Director of Telecommunications  
Boston Police Department

John E. Logan  
Special Counsel to the City of Boston  
1050 Connecticut Avenue, NW  
Tenth Floor  
Washington, D.C. 20036  
202.772.1981

December 21, 2006



**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

*In the Matter of the*

CITY OF BOSTON

)

)

File No.

Application and Waiver Pursuant to )  
To Section 337(c) of the Communications Act )  
Of 1934, as amended, and Section 1.925 of the )  
Commission's Rules to Assist Interoperable Public Safety )  
Radio Communications in Boston Metropolitan )  
Area )

**APPLICATION AND WAIVER REQUEST**

The City of Boston (Boston), on behalf of the Metro-Boston Homeland Security Region (MBHSR), which consists of Boston, the Town of Brookline, the City of Cambridge, the City of Chelsea, the City of Everett, the City of Quincy, the City of Revere, the City of Somerville and the Town of Winthrop, Massachusetts submits this application and waiver request to obtain authority to use unlicensed Part 22 Paging frequencies in the Boston metropolitan area for public safety communications.

These Part 22 Paging frequencies will promote interoperable communications between and among the region's fire, law enforcement, emergency medical and other public safety services throughout the region and enhance the quality of agency communications. This initiative is a critical element of the Boston area's investment in strengthening domestic preparedness and is in partnership with the federal government.



This pleading presents an Application and Waiver request under Section 337(c) of the Communications Act of 1934, as amended and Section 1.925 of the Commission's rules to use unassigned Part 22 Paging frequencies and accompanies 18 applications placed on FCC Form 601. The applications are submitted under the City of Boston's Federal Registration Number (FRN).

### **Background**

The City of Boston and the other MBHSR jurisdictions have undertaken several initiatives to strengthen region wide response and emergency preparedness. These initiatives respond to the September 11, 2001 attacks. The region's expansive corporate, academic and investment banking presence, its enormous rail, shipping, airport and highway infrastructure presents severe challenges in deterring and responding to terror and other emergency circumstances. Boston and area jurisdictions work closely with Commonwealth of Massachusetts agencies, the federal Department of Homeland Security (DHS), other federal agencies and regional law enforcement and public safety agencies in preparing and implementing a pervasive plan directed toward improving substantially detection and response.

The core objective of the initiatives is to implement a strategy that builds a region wide capacity to respond through coordinating and standardizing local assets throughout the area. It seeks to leverage all state, local and regional expertise and resources to ensure that the necessary personnel and equipment can respond in the most expeditious method possible.

The effort is an element of the Urban Area Security Initiative (UASI). UASI's fundamental objective is to bring a focused response encompassing the expertise and



assets of these jurisdictions and agencies to an incident. The enormous challenge facing UASI is improved capability for voice/radio/data interoperable communication across jurisdictions and disciplines to enhance incident command communications, improve coordination and leverage the existing communications infrastructure. Due to the nature of the emergency responses in the area, which range from day-to-day cross jurisdictional/agency responses to region wide mobilization, the MBHSR has developed a plan to capitalize on the area's resources. This request to use unlicensed Part 22 Paging frequencies is a critical element of the plan.

As the core city, Boston established the Mayor's Office of Emergency Preparedness (MOEP) to integrate and manage homeland security activities. The UASI region, the MBHSR, consists of nine jurisdictions: Boston, Brookline, Cambridge, Chelsea, Everett, Quincy, Revere, Somerville, and Winthrop. MOEP planning and implementation has been taking place since 2003 and in 2005 the MBHSR completed its Communications Interoperability 5-Year Strategic Plan. The following 21 organizations form the nucleus of the MBHSR public safety community:

1. Boston Police Department
2. Brookline Police Department
3. Cambridge Police Department
4. Cambridge Fire Department
5. Cambridge Public Safety Communication
6. Chelsea Police Department
7. Everett Police Department
8. Boston Fire Department
9. Revere Fire Department
10. Revere Emergency Management
11. Quincy Emergency Management
12. Somerville Fire Department
13. Somerville Public Safety Communication
14. Winthrop Fire Department
15. Greater Boston Police Council



16. Boston Central Medical Emergency Direction
17. MetroFire
18. Massachusetts Executive Office of Public Safety
19. Massachusetts Port Authority
20. Massachusetts Bay Transportation Authority
21. Boston Mayor's Office of Homeland Security

MBHSR's effort is directed to establishing procedures, obtaining resources and using technology to enhance public safety interoperable and agency specific communications.

In particular, this initiative is directed to improving the communications quality of individual agencies, enhancing interoperability capability in the region's current mutual aid networks and expanding significantly the number of agencies participating in region wide interoperability. There is currently \$18.21 million in funding available to support communications interoperability initiatives and homeland security efforts. In addition, a recent grant from the Federal Emergency Management Agency commits \$567,000 to acquire and deploy communications infrastructure for a participating agency. Commission approval and authorization by second quarter 2007 would allow the project to meet grant support parameters and timeframes.

The availability of funds combined with the vacant Part 22 frequencies presents a unique convergence that will have long term benefit on the region's public safety communications. It will enhance substantially the mutual aid capability of the entire region while ensuring that currently designated mutual aid channels are not consumed by a particular incident to the detriment of responding to other events. Previous efforts have been hindered by either the lack of funding or spectrum resources; the result has been piecemeal improvements that have left many agencies behind. The vacant Part 22 frequencies will make an enormous contribution and are crucial to the success of the



initiative. The contribution to emergency preparedness and response will be tangible and substantial.

### **The Region's Public Safety Communications Systems**

The greater Boston area's public safety radio systems evolved independently with limited interoperability and surge capability. As mutual aid agreements became more prominent, regional interoperability emerged as an increasing concern; the traditional discipline specific radio systems have become overloaded and unable to address interoperability needs. Regional efforts to make improvements have been hampered by the lack of available frequencies.

Current radio communications for MBHSR members are predominantly located on UHF with limited presence in high band VHF frequencies. These VHF frequencies are shared as well with other agencies outside the area. MBHSR seeks to provide a public safety unified interoperable radio system that will better serve the region's citizens and make needed improvements in agency specific communications systems. The objective is to integrate current spectrum resources into a region wide network that improves communications for the major and small incident. MBHSR seeks a network that provides pervasive and seamless communications ability when a large scale mobilization of all agencies is necessary.

There are currently two intra-discipline mutual aid radio systems in the region, BAPERN and MetroFire. The BAPERN (Boston Area Police Emergency Radio Network) is sponsored by the Greater Boston Police Council (GBPC) and includes 128 cities and towns stretching from New Hampshire to Rhode Island. The MetroFire radio system



serves 35 cities and towns and provides inter-agency communications, primarily in the UHF band.

The BAPERN/UHF network includes two area wide UHF channels that are simulcasted across the entire membership area. There are also five "district" UHF channels that are more localized in geographic area scope. The BAPERN system has very limited capacity to respond to large scale multi-agency incidents. In major events the BAPERN system is in full use; in multiple events over a large geographic area the system encounters severe challenges.

The MetroFire radio system consists of one wide area UHF channel for intra-department coordination and one wide area UHF channel for fireground communications. The fireground channel is cross-banded to a VHF frequency for interoperability purposes. There is a third channel primarily used in simplex mode for Hazmat operations and it can also be used for a tactical repeater. These three channel pairs along with the individual city and town department channels provide fire communications across a wide region. There is only one channel to enable cross-band communications. Due to constrained system capacity, multiple incidents across the MetroFire region reduce the ability of commanders to manage incidents effectively. With only one cross-band channel available, impeded communications are encountered in multiple incident environments.

MBHSR conducted an analysis of member agency spectrum resources. MBHSR determined that a high quality region wide interoperability network, consisting of high band VHF, UHF and 800 MHz channels could be implemented if particular agencies could be moved to the UHF band and that particular agencies were afforded channels that allowed greater capacity and range. By leveraging the VHF, UHF and 800 MHz



channels, the plan conserves resources in allowing legacy equipment to be adjusted instead of replaced. As described below, several agencies will assign their current VHF authorizations to the region wide interoperability network and rely on the UHF Part 22 Paging frequencies for improved communications capability. The UHF Part 22 Paging frequencies will also be used to improve wireless communications for several agencies. Ten jurisdictions surrounding MBHSR, whose mutual aid commitments are crucial to region-wide response, are also participating in this initiative to improve communications. In many circumstance present spectrum resources are extremely limited in range, stifling mutual aid. The agencies that will receive channels are:

- City of Lynn Fire Department
- City of Melrose Fire Department
- City of Malden Fire Department
- City of Medford Fire Department
- City of Waltham
- Town of Saugus Fire Department
- Town of Milton Fire Department
- Town of Weymouth Fire Department
- Town of Lexington Fire Department
- Town of Weston



## Request for Part 22 UHF Paging Frequencies

The City of Boston requests that the Commission authorize public safety operations under Part 90 of its rules on the following frequencies:

### UHF Channel 14 and 16

Frequencies Channels will be 12.5 kHz wide (\* denotes simplex use)

Channel Number	Base Xmit	Base Rcve
1	470.0125	473.0125
2	470.0250	473.0250
3	470.0375	473.0375
4	470.0500*	473.0500*
5	470.0625	473.0625
6	470.0750	473.0750
7	470.0875	473.0875
8	470.1125	473.1125
9	470.1250	473.1250
10	470.1375	473.1375
11	470.1500	473.1500
12	470.1625	473.1625
13	470.1750	473.1750
14	470.1875	473.1875
15	470.2000	473.2000
16	482.0125	485.0125
17	482.0250	485.0250
18	482.0375	485.0375
19	482.0500	485.0500
20	482.0625	485.0625
21	482.0750	485.0750
22	482.0875	485.0875
23	482.1375	485.1375
24	485.1500	485.1500
25	482.1625	485.1625
26	482.1750	485.1750
27	482.1875	485.1875
28	482.2000	485.2000
29	482.2125	485.2125
30	482.2250	485.2250
31	482.2375	485.2375
32	482.2500	485.2500
33	482.2625	485.2625
34	482.2750*	485.2750*
35	482.2875	485.2875
36	482.3000	485.3000
37	485.1000*	
38	485/1250*	



To effectuate this region wide interoperability capability the Chelsea, Everett and Revere Fire Departments will be moved from their present channels on VHF to UHF. Chelsea will operate on 2 channels and 1 simplex frequency, Everett and Revere on 2 channels each at the current site locations. Affording Chelsea, Everett and Revere access to these UHF frequencies will also allow more effective communications with each jurisdiction's police department, which are also located on the UHF band.<sup>1</sup>

The UHF Part 22 Paging frequencies will assist MetroFire operations and interoperability. The MetroFire radio system, currently supporting the coordination and operations of 35 agencies in Eastern Massachusetts, will be expanded so that its system is able to support current operational demands. Three simplex frequencies will be placed in a fireground pool for low-power use by all 35 agencies. Two channels will be used to implement two vehicle based cross-band repeaters. Six frequencies will be used to supplement the repeater fire ground channels with three geographically separated wide area repeater channels. Another channel will be designated for arson investigations and administrative operations.

With the UHF band reflecting the predominant spectrum resources of the region's fire services, 13 Part 22 Paging channels will be distributed among the ten fire departments that are not part of MBHSR, but have mutual aid responsibilities in the region. Malden, Saugus, Melrose, Milton, Weymouth, Medford, Lexington and Weston will be assigned one UHF channel each to promote MetroFire interoperability capability and to improve agency communications. The City of Lynn will be assigned three channels and the City of Waltham two channels for both interoperability and improved communications.

---

<sup>1</sup> The call signs and frequencies are KDD985 (Chelsea), KCH424 (Everett) and KDR728 (Revere).



Additionally, the UHF Part 22 Paging frequencies will allow 3 channels to be dedicated to assist the Boston Emergency Medical Services (EMS), which face severe capacity challenges. Two of these channels will replace the currently used National Medical Telemetry channels and bring Boston EMS into compliance with regional standards and address the operations and surge challenges the system currently faces. Two other simplex frequencies will be designated to assist tactical EMS operations region wide.

To enhance the BAPERN radio network, particularly during major incidents, the Part 22 UHF frequencies will add two additional repeater channels for comprehensive coverage of the greater Boston area. The channels will aid in daily operations by providing additional talk paths in what is currently a severely congested environment. All the channels committed will increase immeasurably the region's ability to provide a coordinated response to a catastrophic incident as well as provide improved day to day communications

Two channels will be used to build out two multi-band channels across the MBHSR region for inter-jurisdictional, inter-discipline communications and will be part of the region wide interoperability network. The four VHF channels of the Chelsea, Everett and Revere Fire Departments will be used to support the interoperability network. Available 800 MHz channels will be used to complete this initiative.

Communications with Commonwealth agencies, particularly the State Police, which predominantly use the 800 MHz band, will be promoted through installing the UHF channels in the State Police communications system and through cross banding technologies. The City of Cambridge 800 MHz system will incorporate such capability;



its Police and Fire agencies will be assigned one UHF channel each to connect their systems to the UHF police and fire networks.

Overall, the Part 22 Paging channels will enable a region wide interoperability network that will integrate the VHF, UHF and 800 MHz bands. The channels will also improve considerably the communications capability of several area agencies that are in extreme need of capacity. The project will also broaden the number of agencies able to participate in real interoperable communications considerably.<sup>2</sup>

Pursuant to section 337(c) of the Communications Act of 1934, as amended, and Section 1.925 of the Commission's rules, the Metro-Boston Homeland Security Region requests that it be authorized to use 74 Part 22 frequencies that are currently unlicensed. As the frequencies are not presently designated for public safety use, this request requires a waiver of Sections 22.7, 22.501, 22.621, 22.651, and 90.311 of the Commission's Rules.

**The Standards of Section 337(c) of the Communications Act of 1934, as Amended, Making Spectrum Available to Public Safety Agencies Are Met**

Section 337(c) of the Communications Act, as amended, states that the Commission shall grant an application by an entity seeking to provide public safety services to the extent necessary to permit the use of unassigned frequencies, if the Commission makes five findings. These findings are: (1) no other spectrum allocated for public safety use is immediately available; (2) there will be no harmful interference to other spectrum users entitled to protection; (3) public safety use of the frequencies is consistent with other public safety spectrum allocations in the geographic area in question; (4) the unassigned frequencies were allocated for their present use not less than

---

<sup>2</sup> The Appendix enumerates each agency that would receive Part 22 UHF channels.



two years prior to the grant of the application at issue; and (5) the grant of the application is consistent with the public interest.<sup>3</sup> MBHSR satisfies all criteria of the law.

*No other spectrum allocated for public safety services is immediately available to satisfy the requested public safety service use.*

As the accompanying analysis of the Vogel Consulting Group, Inc., notes, there is not adequate spectrum available from pools allocated to public safety agencies to meet MBHSR's requirements nor is equipment available for those narrow bandwidth frequencies, which might be available.

Specifically, in the 150-160 MHz band, the analysis indicates only one available frequency, which does not meet the channel capacity required by the initiative. In the 450-454 MHz and 460 to 466 MHz bands, the search shows no available frequencies. In the 470-473 MHz and 482-485 MHz bands, there are many available 6.25 kHz frequencies but no manufacturer yet provides proven and dependable high powered equipment for this narrow bandwidth. In addition, even if equipment were available in the bandwidth, the close proximity of existing co-channel users would likely preclude use.

Channels on the 700 MHz public safety band are not available until February 2009. With regard to 806-821/851-866 MHz, all channels are assigned; there are no land mobile channels available in this band. A survey of the National Public Safety Planning Advisory Committee (NPSPAC) channels indicates that the 18 channels available are inadequate to meet the initiative's requirements. Four of these channels will likely be

---

<sup>3</sup> "Public safety services" are defined by 47 U.S.C. § 337(f) as services the sole or principal purpose of which is to protect the safety of life, health, or property, that are provided by the governmental entities or by non-governmental entities authorized by the governmental entity whose primary mission is the provision of such services, and that are not made commercially available to the public by the provider. The proposed use of the Part 22 Paging frequencies meets this requirement.



used for interoperability with agencies located in the 800 MHz band. The frequency advisor for the Association of Public Safety Communications Officials, International (APCO) for the Boston Metropolitan area has provided a statement regarding the availability of clear usable frequencies in the VHF, UHF, or 800 MHz bands.

*The requested use is technically feasible without causing harmful interference to other spectrum users entitled to protection from such interference under the Commission's regulations.*

This frequency band, 470-512 MHz, is operated on a geographically shared basis with Television Broadcasting Stations, in this case channels 14 and 16. FCC rules set forth limitations on a land mobile transmitter's maximum Effective Radiated Power (ERP), height and geographic location in operations in the TV sharing band, also known as the "T band".<sup>4</sup> Again referencing the technical analysis of the Vogel Consulting Group, Inc, MBHSR's proposal comports with these policies. The proposal will cause no interference with entities authorized to operate within frequency band 470-512 in the Connecticut, Massachusetts, Maine, New Hampshire, New York, Rhode Island and Vermont area.

Land mobile operations on adjacent channels to the frequencies proposed to be used were also examined, the Vogel analysis concludes that there will be no interference to co or adjacent channel users.

MBHSR has met its burden by demonstrating that its proposal is technically feasible and will not interfere with authorized users in the frequency band it proposes to operate in. There should be no interference to the reception of intended signals for any of the authorized receivers at the sites of adjacent users.

---

<sup>4</sup> 47 CFR Part 90, Subpart L, Section 90.309



*the use of the unassigned frequency for the provision of public safety services is consistent with other allocations for the provision of such services in the geographic area for which the application is made*

MBHSR's proposal encompasses a frequency band where land mobile operations are authorized. Experience has demonstrated the effective use of these channels by public safety agencies without harm to other users. The Commission's assignment of the proposed channels to MBHSR is consistent with other allocations made in this frequency band.

*the unassigned frequency was allocated for its present purpose not less than 2 years prior to the date on which the application is granted*

The assignment of the frequencies for paging control channels became effective on January 1, 1995<sup>5</sup>. The criteria's intent of protecting new services is not undermined, thereby meeting the third criteria.

*granting such application is consistent with the public interest*

The City of Boston, MBHSR agencies and regional public safety agencies face a critical demand to modernize interoperability and overall communications capability of the law enforcement, fire, emergency medical and other public safety agencies throughout the area. This application to the Commission is part of a pervasive and comprehensive initiative to confront the need to make substantial improvement in security and overall preparedness to prevent, respond to and mitigate terrorist incidents. The public interest is clearly promoted by the Commission's swift and favorable decision on this application and waiver request to allow broad based region wide communications.

The MBHSR has presented an analysis addressing current public safety spectrum availability. It has assured authorized users in and adjacent to the band that use will leave

---

<sup>5</sup> *Amendment of Part 22 of the Commission's Rules*, 9 FCC Rcd 6513 (September 9, 1994)



them unaffected. It has documented the deficiencies in present interoperability capability and in operational communications. The jurisdictions involved have committed to a substantial capital investment as has the federal government. The failure to broaden interoperability will result in serious detriment in the ability of police, fire and emergency services throughout the region to respond to citizens in need. The public interest will be served by the tangible enhancements the Commission's action will have on the public's health and safety.<sup>6</sup> The Commission should act expeditiously and grant the application and waiver.<sup>7</sup>

## **CONCLUSION**

The Commission has a critical role in the Nation's effort to improve domestic preparedness. The MBHSR commends the Commission for its commitment, which

---

<sup>6</sup> Pursuant to Section 1.925 of the Commission's rules, Boston has amply demonstrated that all the necessary elements for a waiver exist. Boston has no reasonable alternative than the submitted proposal, under these unique circumstances the present rules are served, and failure to provide relief would be contrary to the public interest.

<sup>7</sup> Boston urges the Commission to designate this proceeding as a permit but disclose matter so that the wide-ranging interests in the viability of public safety communications system can have full opportunity to participate in the process.

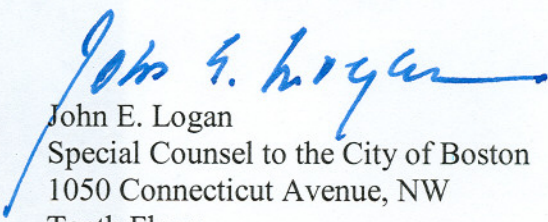


through its decisions and actions, has resulted in tangible enhancement to public safety communications nationwide. Consistent with this premise, the Metro-Boston Homeland Security Region urges the Commission's prompt and positive consideration of this request

Respectfully submitted,

Chief Gerald R. Reardon  
Cambridge Fire Department  
Chair, Metro-Homeland Security  
Region Communications Interoperability  
Subcommittee

H. David Troup, Jr.  
Director of Telecommunications  
Boston Police Department



John E. Logan  
Special Counsel to the City of Boston  
1050 Connecticut Avenue, NW  
Tenth Floor  
Washington, D.C. 20008  
202.772.1981

December 21, 2006



**Appendix**  
**MBHSR Part 22 UHF Channels**

Band	R	S	Repeated or Simplex	Purpose
UHF	1		R	Chelsea Fire Dept dispatch channel
UHF	1		R	Chelsea Fire Dept tactical channel
UHF		1	S	Chelsea Fire Dept EMS channel
UHF	1		R	Everett Fire Dept dispatch channel
UHF	1		R	Everett Fire Dept tactical channel
UHF	1		R	Revere Fire Dept dispatch channel
UHF	1		R	Revere Fire Dept tactical channel
UHF	1		R	Cambridge Fire x CFD-16
UHF	1		R	Cambridge Police x CPD-14
UHF		1	S	Regional fire ground channel 1 (MetroFire)
UHF	1		R	MBHSR multi-band interoperability channel #1
UHF	1		R	MBHSR multi-band interoperability channel #2
UHF	1		R	MetroFire Silver - vehicular repeaters (crossbanded; FCC station type MO3)
UHF	1		R	MetroFire Orange - vehicular repeaters (crossbanded; FCC station type MO3)
UHF	1		R	MetroFire Blue - South
UHF	1		R	MetroFire Green - North
UHF	1		R	BAPERN Central District Tac 1
UHF	1		R	BAPERN Central District Tac 2
UHF	1		R	Boston EMS
UHF	1		R	Boston EMS
UHF	1		R	Boston EMS
UHF		1	S	Regional fire ground channel 2 (MetroFire)
UHF		1	S	Regional fire ground channel 3 (MetroFire)
UHF	1		R	MetroFire arson
UHF	1		R	MetroFire Central District
UHF		1	S	Regional EMS direct channel 1
UHF		1	S	Regional EMS direct channel 2
UHF	1		R	Non-UASI sector Malden (would enhance the interop issues for MetroFire)
UHF	1		R	Non-UASI sector Saugus (would enhance the interop issues for MetroFire)
UHF	1		R	Non-UASI sector Melrose (would enhance the interop issues for MetroFire)
UHF	1		R	Non-UASI sector Milton shares with Braintree (would enhance the interop issues for MetroFire)
UHF	1		R	Non-UASI sector Weymouth (would enhance the interop issues for MetroFire)
UHF	1		R	Non-UASI sector Medford (would enhance the interop issues for MetroFire)
UHF	1		R	Non-UASI sector Lexington (would enhance the interop issues for MetroFire)
UHF	3		R	Non-UASI sector Lynn (would enhance the interop issues for MetroFire)
UHF	2		R	Non-UASI sector Waltham (would enhance the interop issues for MetroFire)
UHF	1		R	Non-UASI sector Weston (would enhance the interop issues for MetroFire)

34      6      74